



NSAI
Standards

Irish Standard
I.S. EN ISO 14505-2:2006

Ergonomics of the thermal environment - Evaluation of thermal environments in vehicles - Part 2: Determination of equivalent temperature (ISO 14505 -2:2006)

I.S. EN ISO 14505-2:2006

Incorporating amendments/corrigenda issued since publication:

EN ISO 14505-2:2006/AC:2009

<i>This document replaces:</i>	<i>This document is based on:</i> EN ISO 14505-2:2006	<i>Published:</i> 15 December, 2006
This document was published under the authority of the NSAI and comes into effect on: 16 February, 2007		ICS number: 13.180 43.020
NSAI 1 Swift Square, Northwood, Santry Dublin 9	T +353 1 807 3800 F +353 1 807 3838 E standards@nsai.ie W NSAI.ie	Sales: T +353 1 857 6730 F +353 1 857 6729 W standards.ie
Price Code: K		
Údarás um Chaighdeáin Náisiúnta na hÉireann		



NSAI
Standards

Corrigendum
I.S. EN ISO 14505-2:2006/AC:2009

Ergonomics of the thermal environment - Evaluation of thermal environments in vehicles - Part 2: Determination of equivalent temperature (ISO 14505-2:2006/Cor 1:2007)

I.S. EN ISO 14505-2:2006/AC:2009

Incorporating amendments/corrigenda issued since publication:

<i>This document replaces:</i>	<i>This document is based on:</i> EN ISO 14505-2:2006/AC:2009	<i>Published:</i>
This document was published under the authority of the NSAI and comes into effect on: 28 August, 2009		ICS number: 13.180 43.020
NSAI 1 Swift Square, Northwood, Santry Dublin 9	T +353 1 807 3800 F +353 1 807 3838 E standards@nsai.ie W NSAI.ie	Sales: T +353 1 857 6730 F +353 1 857 6729 W standards.ie
		Price Code: C
Údarás um Chaighdeáin Náisiúnta na hÉireann		

EUROPEAN STANDARD

EN ISO 14505-2:2006/AC

NORME EUROPÉENNE

April 2009

EUROPÄISCHE NORM

Avril 2009

April 2009

ICS 13.180; 43.020

English version
Version Française
Deutsche Fassung

Ergonomics of the thermal environment - Evaluation of thermal environments in vehicles - Part 2: Determination of equivalent temperature (ISO 14505-2:2006/Cor 1:2007)

Ergonomie des ambiances thermiques - Évaluation des ambiances thermiques dans les véhicules - Partie 2: Détermination de la température équivalente (ISO 14505-2:2006/Cor 1:2007)

Ergonomie der thermischen Umgebung - Beurteilung der thermischen Umgebung in Fahrzeugen - Teil 2: Bestimmung der Äquivalenttemperatur (ISO 14505-2:2006/Cor 1:2007)

This corrigendum becomes effective on 29 April 2009 for incorporation in the official German and English versions of the EN.

Ce corrigendum prendra effet le 29 avril 2009 pour incorporation dans les versions officielles allemande et anglaise de la EN.

Die Berichtigung tritt am 29. April 2009 zur Einarbeitung in die offizielle Deutsche und Englische Fassung der EN in Kraft.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

EN ISO 14505-2:2006/AC:2009 (E) **I.S. EN ISO 14505-2:2006/AC:2009**

Endorsement notice

The text of ISO 14505-2:2006/Cor.1:2007 has been approved by CEN as a European Corrigendum without any modification.



I.S. EN ISO 14505-2:2006/AC:2009
INTERNATIONAL STANDARD ISO 14505-2:2006
TECHNICAL CORRIGENDUM 1

Published 2007-08-01

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Ergonomics of the thermal environment — Evaluation of thermal environments in vehicles —

Part 2: Determination of equivalent temperature

TECHNICAL CORRIGENDUM 1

*Ergonomie des ambiances thermiques — Évaluation des ambiances thermiques dans les véhicules —
Partie 2: Détermination de la température équivalente*

RECTIFICATIF TECHNIQUE 1

Technical Corrigendum 1 to ISO 14505-2:2006 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 5, *Ergonomics of the physical environment*.

Page 3

Subclause 4.2, Equation 2

Replace Equation 2 with the following:

$$C = h_c (t_{sk} - t_a) \quad (2)$$

where

R is heat exchange by radiation, in watts per square metre (W/m²);

C is heat exchange by convection, in watts per square metre (W/m²);

h_r is the radiation heat transfer coefficient, in watts per square metre degree Celsius [$W/(m^2\text{°C})$];

h_c is the convection heat transfer coefficient, in watts per square metre degree Celsius [$W/(m^2\text{°C})$];

t_{sk} is the skin temperature, in degrees Celsius (°C);

\bar{t}_r is the mean radiant temperature, in degrees Celsius (°C);

t_a is the ambient air temperature, in degrees Celsius (°C).



National Standards Authority of Ireland

IRISH STANDARD

I.S. EN ISO 14505-2:2006

ICS 13.180
43.020

**ERGONOMICS OF THE THERMAL
ENVIRONMENT - EVALUATION OF THERMAL
ENVIRONMENTS IN VEHICLES - PART 2:
DETERMINATION OF EQUIVALENT
TEMPERATURE (ISO 14505-2:2006)**

National Standards
Authority of Ireland
Glasnevin, Dublin 9
Ireland

Tel: +353 1 807 3800
Fax: +353 1 807 3838
<http://www.nsai.ie>

Sales
<http://www.standards.ie>

*This Irish Standard was
published under the
authority of the National
Standards Authority of
Ireland and comes into
effect on:
16 February 2007*

**NO COPYING WITHOUT NSAI
PERMISSION EXCEPT AS
PERMITTED BY COPYRIGHT
LAW**

© NSAI 2006

Price Code K

Údarás um Chaighdeán Náisiúnta na hÉireann

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 14505-2

December 2006

ICS 13.180; 43.020

English Version

Ergonomics of the thermal environment - Evaluation of thermal environments in vehicles - Part 2: Determination of equivalent temperature (ISO 14505-2:2006)

Ergonomie des ambiances thermiques - Évaluation des ambiances thermiques dans les véhicules - Partie 2: Détermination de la température équivalente (ISO 14505-2:2006)

Ergonomie der thermischen Umgebung - Beurteilung der thermischen Umgebung in Fahrzeugen - Teil 2: Bestimmung der Äquivalenttemperatur (ISO 14505-2:2006)

This European Standard was approved by CEN on 14 December 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

EN ISO 14505-2:2006 (E)

Foreword

This document (EN ISO 14505-2:2006) has been prepared by Technical Committee ISO/TC 159 "Ergonomics" in collaboration with Technical Committee CEN/TC 122 "Ergonomics", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2007, and conflicting national standards shall be withdrawn at the latest by June 2007.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO 14505-2:2006 has been approved by CEN as EN ISO 14505-2:2006 without any modifications.

INTERNATIONAL STANDARD

ISO
14505-2

First edition
2006-12-15

Ergonomics of the thermal environment — Evaluation of thermal environments in vehicles —

Part 2: Determination of equivalent temperature

*Ergonomie des ambiances thermiques — Évaluation des ambiances
thermiques dans les véhicules —*

Partie 2: Détermination de la température équivalente



Reference number
ISO 14505-2:2006(E)

© ISO 2006

ISO 14505-2:2006(E)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2006

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Assessment principles	2
4.1 General description of equivalent temperature	2
4.2 General determination principle of equivalent temperature	3
5 Specific equivalent temperatures	4
5.1 General.....	4
5.2 Whole body equivalent temperature.....	4
5.3 Segmental equivalent temperature	5
5.4 Directional equivalent temperature.....	5
5.5 Omnidirectional equivalent temperature.....	6
6 Measuring instruments	7
7 Assessment	7
7.1 Determination of whole body equivalent temperature.....	8
7.2 Determination of local equivalent temperature	8
Annex A (informative) Examples of measuring instruments	9
Annex B (informative) Characteristics and specifications of measuring instruments	12
Annex C (informative) Calibration and other determinations	18
Annex D (informative) Interpretation of equivalent temperature	20
Annex E (informative) Examples	23
Bibliography	25

ISO 14505-2:2006(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 14505-2 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 5, *Ergonomics of the physical environment*.

ISO 14505 consists of the following parts, under the general title *Ergonomics of the thermal environment — Evaluation of thermal environments in vehicles*:

- *Part 1: Principles and methods for assessment of thermal stress* [Technical Specification]
- *Part 2: Determination of equivalent temperature*
- *Part 3: Evaluation of thermal comfort using human subjects*

Introduction

The interaction of convective, radiative and conductive heat exchange in a vehicle compartment is very complex. External thermal loads in combination with the internal heating and ventilation system of the vehicle create a local climate that can vary considerably in space and time. Asymmetric thermal conditions arise and these are often the main cause of complaints of thermal discomfort. In vehicles without or having a poor heating, ventilating and air-conditioning system (HVAC-system), thermal stress is determined largely by the impact of the ambient climatic conditions on the vehicle compartment. Subjective evaluation is integrative, as the individual combines into one reaction the combined effect of several thermal stimuli. However, it is not sufficiently detailed or accurate for repeated use. Technical measurements provide detailed and accurate information, but require integration in order to predict the thermal effects on humans. Since several climatic factors play a role for the final heat exchange of a person, an integrated measure of these factors, representing their relative importance, is required.

Ergonomics of the thermal environment — Evaluation of thermal environments in vehicles —

Part 2: Determination of equivalent temperature

1 Scope

This part of ISO 14505 provides guidelines for the assessment of the thermal conditions inside a vehicle compartment. It can also be applied to other confined spaces with asymmetric climatic conditions. It is primarily intended for assessment of thermal conditions, when deviations from thermal neutrality are relatively small. Appropriate methodology as given in this part of ISO 14505 can be chosen for inclusion in specific performance standards for testing of HVAC-systems for vehicles and similar confined spaces.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies

ISO 13731, *Ergonomics of the thermal environment — Vocabulary and symbols*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13731 and the following apply.

3.1 equivalent temperature

t_{eq}
temperature of a homogenous space, with mean radiant temperature equal to air temperature and zero air velocity, in which a person exchanges the same heat loss by convection and radiation as in the actual conditions under assessment

3.2 whole body equivalent temperature

$t_{eq,whole}$
temperature of an imaginary enclosure with the same temperature in air and on surrounding surfaces and with air velocity equal to zero in which a full-scale, human shaped, heated sensor will exchange the same dry heat by radiation and convection as in the actual non-uniform environment

3.3 segmental equivalent temperature

$t_{eq,segment}$
uniform temperature of an imaginary enclosure with the same temperature in air and on surrounding surfaces and with air velocity equal to zero in which one or more selected zones of a thermal manikin will exchange the same dry heat by radiation and convection as in the actual non-uniform environment

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- Looking for additional Standards? Visit Intertek Inform Infostore
 - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-